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### Search Results -

Terms	Documents
L2 and (indication or indicat\$3)	2

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 EPO Abstracts Database  
 JPO Abstracts Database  
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#### Set Name Query

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#### Hit Count Set Name

result set

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<u>L3</u>	L2 and (indication or indicat\$3)	2	<u>L3</u>
<u>L2</u>	L1 and (contain\$3 or recipient)same communicat\$6	2	<u>L2</u>
<u>L1</u>	(5950632 or 6108685).pn.	2	<u>L1</u>

END OF SEARCH HISTORY

[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

End of Result Set



Generate Collection

Print

L3: Entry 2 of 2

File: USPT

Sep 14, 1999

DOCUMENT-IDENTIFIER: US 5950632 A

TITLE: Medical communication apparatus, system, and method

Abstract Text (1):

A medical communication apparatus comprises a receiver (54) to receive a message and at least one output device (56) responsive to the receiver (54). The at least one output device (56) generates an alert for taking a first medicine and a second medicine in response to the message, and graphically indicates the first medicine and the second medicine.

Drawing Description Text (4):

FIG. 2 is a block diagram of an embodiment of a medical communication apparatus and a medicine container in accordance with the present invention;

Detailed Description Text (3):

The medical communication apparatus 20 communicates with a medical database system 24. The medical database system 24 stores information associated with the at least one prescription for the end user 22. Examples of the information stored by the medical database system 24 include, but are not limited to, a name of each medicine which the end user 22 is prescribed to take, a dosage of each medicine, times that each medicine is to be taken, an amount of each medicine which remains in a prescription, and an image or an indicator thereof associated with each medicine.

Detailed Description Text (4):

The medical database system 24 communicates with the medical communication apparatus 20 to alert the end user 22 of a time to take at least one medicine. The alert can be in the form of an audible indication, a visible indication, or a vibratory indication generated by the medical communication apparatus 20. In addition, the medical communication apparatus 20 can indicate which medicine to take, and a corresponding amount of each medicine to take.

Detailed Description Text (5):

Preferably, the medical communication apparatus 20 communicates with at least one medicine container 26 containing the at least one medicine which is to be taken. Here, the medical communication apparatus 20 transmits a signal to the at least one medicine container 26. Selected medicine containers generate an audible indication or a visible indication in response to receiving the signal. The indication is beneficial in aiding the end user 22 to locate selected medicine containers at times when medicine contained therein is to be taken.

Detailed Description Text (6):

After being alerted, the medical communication apparatus 20 communicates a signal to the medical database system 24 to acknowledge that the end user 22 has complied with his/her prescription. If no acknowledgment is received or if an improper acknowledgment is received (e.g. indicating that an improper medicine was taken and/or an improper dosage was taken), the medical database system 24 can either: (i) communicate a subsequent signal to the medical communication apparatus 20 and/or to another communication unit associated with the end user 22; (ii)

communicate a signal indicating noncompliance to a communication unit 30 associated with a caregiver of the end user 20; (iii) communicate a signal indicating noncompliance to a communication unit 32 associated with a family member of the end user 20; and/or (iv) communicate a signal indicating noncompliance to a communication unit 34 associated with medical personnel for the end user 20.

Detailed Description Text (8):

Optionally, the at least one medicine container 26 senses an amount of medicine remaining therein, and transmits a signal associated therewith to the medical communication apparatus 20. In turn, the medical communication apparatus 20 communicates a signal associated with the amount of medicine remaining to the medical database system 24. The medical database system 24 communicates with a communication unit 36 associated with a medical supply source, such as a pharmacy, based upon the amount of medicine remaining. For example, the medical database system 24 can communicate a message to a pharmacy when the amount of medicine is at or below a predetermined threshold. This is beneficial for automatic renewal of prescriptions when the amount of medicine is below the predetermined threshold.

Detailed Description Text (9):

The medical database system 24 is populated by communicating with the communication unit 34 of the medical personnel and/or the communication unit 36 associated with the medical supply source. Upon prescribing a medicine, either the medical personnel or a pharmacy can communicate an identifier of the end user 22, the name of the medicine, the dosage, the times for taking the medicine, and an image indicative of the medicine to the medical database system 24.

Detailed Description Text (13):

FIG. 2 is a block diagram of an embodiment of a medical communication apparatus 50 and a medicine container 52 in accordance with the present invention. The medical communication apparatus 50 includes a receiver 54 and an optional transmitter 55 to communicate with the medical database system 24. Preferably, the receiver 54 is included in a selective call receiver, such as a wireless pager, to communicate with the medical database system 24 via a paging service. The receiver 54 can be included in a one-way pager (receive-only) or can be included with the transmitter 55 in a two-way pager (receive and transmit). The paging service can utilize a local paging network, a regional paging network, a nationwide paging network, or a global paging network.

Detailed Description Text (16):

Additionally, the at least one output device 56 is utilized to indicate which medicine to take, and how much of each medicine to take. Preferably, the at least one output device 56 includes a display device which displays a graphical representation of each medicine to take. The graphical representation can include an image corresponding to an image 60 associated with the medicine container 52. The image 60 can be supported by a substrate 62 which is affixed to the medicine container 52 or is a part of the medicine container 52. Alternatively, the graphical representation can include an image of medicine 64 within the medicine container 52. Here, for example, the graphical representation can include an image of a pill. If desired, the graphical representation can include a color corresponding to a color associated with the medicine container 52 or the medicine 64.

Detailed Description Text (17):

Regardless of the type of graphical representation, it is preferred that the at least one output device 56 also indicate a dosage of each medicine which is to be taken. The dosage can be indicated numerically by displaying a number with the graphical representation. Alternatively, the dosage can be indicated by displaying a number of like graphical representations. For example, a dosage of two pills can be indicated by displaying two graphical representations for the pill.

Detailed Description Text (21):

Optionally, the medical communication apparatus 50 includes a transmitter 72 and a receiver 74 for communicating signals with a receiver 76 and a transmitter 80 associated with the medicine container 52. In response to the receiver 54 receiving a paging message indicating that the medicine 64 is to be taken, the transmitter 72 transmits a signal for reception by the receiver 76. An indicator 82 generates an indication, such as an audible indication or a visible indication, in response to the receiver 76 receiving the signal. The indicator 82 can include a display device having a light-emitting display element or a liquid crystal display element to generate a visible indication, or an audio output device such as a speaker or a buzzer to generate an audible indication.

Detailed Description Text (22):

Alternatively, the transmitter 72 transmits the 35 signal to the receiver 76 in response to a user-initiated action received by the at least one input device 70. Here, for example, the end user 22 can depress a button to initiate an indication to be generated by the indicator 82.

Detailed Description Text (24):

The transmitter 80 transmits a signal based upon the amount of the medicine 64 sensed by the sensor 84. The signal can indicate the amount of the medicine 64 that remains, or can indicate that the amount of the medicine 64 is at or below a predetermined threshold. For example, the signal may be transmitted only if the amount of the medicine 64 is less than that required for a couple of days of use.

Detailed Description Text (25):

The signal from the transmitter 80 is received by the receiver 74. In response to receiving the signal, the transmitter 55 transmits a signal associated with the amount of the medicine 64. The signal is communicated to the medical database system 24 via the paging network. The signal can indicate the amount of the medicine 64 that remains, or can indicate that the amount of the medicine 64 is at or below a predetermined threshold.

Detailed Description Text (27):

The receiver 76, the transmitter 80, the indicator 82, and the sensor 84 are coupled to a processor 86. The processor 86 directs operations performed by the aforementioned components using one or more electronic components such as a microprocessor, a custom integrated circuit, an application-specific integrated circuit, and/or discrete electronic components.

Detailed Description Text (38):

Alternatively, the machine-readable data 94 is stored in and accessed from a radio frequency tag associated with the medicine container 52. Here, the data reader 92 includes a tag communicating device.

Detailed Description Text (42):

For purposes of illustration, the human-readable image 114 includes a heart-shaped icon to indicate to the end user 22 that the first medicine is for a heart condition. The human-readable image 122 includes an icon indicating that the second medicine is for alleviating pain. The human-readable image 130 includes an image of a pill of the third medicine.

Detailed Description Text (45):

The medical communication apparatus 100 transmits a first signal for reception by a receiver associated with the first medicine container 102, and a second signal for reception by a receiver associated with the third medicine container 106. The first signal directs an audio output device 140 associated with the first medicine container 102 to generate an audible indication. The second signal directs an audio output device 142 associated with the third medicine container 106 to generate an audible indication. The audible indications assist the end user 22 to determine

which medicines to take, and to locate the first medicine container 102 which is remotely located from the second medicine container 104 and the third medicine container 106.

Detailed Description Text (46):

It is noted that an audible indication is not generated by an audio output device 144 associated with the second medicine container 104 since the second medicine is not to be taken at this time. However, the display device 136 is capable of displaying an image corresponding to the human-readable image 122 at another time. The image can be displayed by a plurality of pixels, or by a display element patterned as the human-readable image 122.

Detailed Description Text (48):

The end user depresses the first button 146 to indicate he/she has complied with taking the first medicine, and depresses the second button 148 to indicate he/she has complied with taking the third medicine. In response to depressing the first button 146 and the second button 148, the medical communication apparatus 100 communicates an acknowledgment signal to the medical database system 24 via a paging network.

Detailed Description Text (55):

FIG. 5 is a flow chart of an embodiment of a first method performed by the medical database system 24. As indicated by block 200, the method includes a step of receiving prescription information. The prescription information can be communicated from the communication unit 34 associated with medical personnel or the communication unit 36 associated with a pharmacy. The prescription information can be communicated to the medical database system 24 using a telephone network or a computer network such as the Internet or an intranet, for example. The prescription information can include an identifier of the end user, an identifier of the medicine, an image or a designator thereof associated with the medicine, a prescribed dosage of the medicine, at least one time at which the medicine is to be taken, an amount of medicine in the prescription, an identifier of the medical personnel, a telecommunication code for the medical personnel, an identifier of the pharmacy, and a telecommunication code for the pharmacy.

Detailed Description Text (56):

As indicated by block 202, the method includes a step of storing at least a portion of the prescription information in a database. This step can include a step of creating a record for the end user identified in the prescription if no such record exists. If a record for the end user already exists, the prescription information is stored in the record.

Detailed Description Text (57):

FIG. 6 is a flow chart of an embodiment of a second method performed by the medical database system. As indicated by block 210, the method includes a step of transmitting a message to alert the end user of a time to take his/her medicine. The message is transmitted at a time based upon the prescription information stored in a record for the end user. The message is communicated to the medical communication apparatus of the end user using a first telecommunication code stored in the record. The message can include an identifier for each of at least one medicine, an image or a designator thereof for each medicine, and a dosage for each medicine.

Detailed Description Text (58):

As indicated by block 212, the method includes a step of determining whether a message indicating compliance with the prescription was received from the medical communication apparatus within a time duration. If the message indicating compliance is received within the time duration, a step of writing data indicative of compliance to the compliance history is performed as indicated by block 214.

Detailed Description Text (59):

If no message indicating compliance is received within the time duration, a step of transmitting at least one subsequent message to the end user is performed as indicated by block 216. This step can include sending a subsequent message to the medical communication apparatus and/or sending a message to the end user using another of the telecommunication codes stored in the record. Using the paging number, a paging message alerting of a time to take medicine can be communicated to the end user's pager. Using the telephone number, the cellular telephone number, and/or the PCS number, an automated voice message or fax message alerting of a time to take medicine can be communicated to the end user. Using the electronic mail address, an e-mail message alerting the end user of a time to take medicine can be communicated to a network access apparatus such as a personal computer.

Detailed Description Text (60):

Additionally, if no message indicating compliance is received within the time duration, a step of transmitting at least one message to another individual can be performed as indicated by block 220. This step can include sending a message to at least one of a caregiver for the end user, a family member of the end user, and the medical personnel using the telecommunication codes stored in the record. The message can include a paging message, an automated voice telephone message, a fax message, or an e-mail message indicating noncompliance of the end user with his/her prescription.

Detailed Description Text (61):

As indicated by block 222, the method includes a step of writing data indicative of noncompliance to the compliance history. After performing the step indicated by block 214 or the step indicated by block 222, flow of the method is directed back to block 210 to alert the end user, at a next prescribed time, to take his/her medicine.

Detailed Description Text (62):

FIG. 7 is a flow chart of an embodiment of a first method performed by a medical communication apparatus. As indicated by block 230, the method includes a step of receiving a message generated by the medical database system 24. The message can include an identifier for each medicine, an image or a designator thereof for each medicine, and a dosage for each medicine.

Detailed Description Text (64):

As indicated by block 232, the method includes a step of generating an alert indication. The alert indication is generated using the at least one output device 56 as directed by the processor 90.

Detailed Description Text (65):

As indicated by block 234, the method includes a step of displaying at least one image indicative of at least one medicine and a respective dosage therefor. The at least one image includes an image corresponding to the image 60 on the medicine container 52 containing the medicine 64 to be taken. The dosage is indicated either by displaying a number with the image or by displaying a number of like images corresponding to a number of pills to be taken.

Detailed Description Text (67):

As indicated by block 236, the method includes a step of transmitting a signal to the medicine container 52 containing the medicine 64 to be taken. The signal is transmitted by the transmitter 72 as directed by the processor 90. The signal initiates the medicine container 52 to generate an indication for purposes described earlier. The signal can encode an identifier to identify which medicine container is to generate the indication.

Detailed Description Text (68):

As indicated by block 240, the method includes a step of receiving at least one

user-initiated action. Each user-initiated action is received by the input device 70 described with reference to FIG. 2 or the buttons described with reference to FIG. 3. Typically, the at least one user-initiated action indicates that the end user has received the message and/or has complied with his/her prescription.

Detailed Description Text (69):

As indicated by block 242, the method includes a step of transmitting an acknowledgment message to the medical database system 24. The acknowledgment message can be sent in response to receiving the at least one user-initiated action. The acknowledgment message is indicative of reception of the message and/or compliance with the prescription. The acknowledgment message is transmitted using the transmitter 55.

Detailed Description Text (70):

FIG. 8 is a flow chart of an embodiment of a first method performed by a medicine container. As indicated by block 250, the method includes a step of receiving a signal from the medical communication apparatus. The signal is received by the receiver 76 described with reference to FIG. 2.

Detailed Description Text (71):

As indicated by block 252, the method includes a step of generating an indication if the signal identifies the medicine container. The processor 86 determines if the signal identifies the medicine container by comparing an identifier encoded in the signal with an identifier stored locally. The indication is generated by the indicator 82 under the direction of the processor 86 if the encoded identifier matches the locally-stored identifier.

Detailed Description Text (72):

FIG. 9 is a flow chart of an embodiment of a second method performed by a medicine container. As indicated by block 260, the method includes a step of sensing or estimating an amount of medicine remaining within the medicine container. The step of sensing the amount of medicine is performed by the sensor 84 and the processor 86 as described with reference to FIG. 2.

Detailed Description Text (73):

As indicated by block 262, the method includes a step of transmitting a signal associated with the amount of medicine to the medical communication apparatus 50. The signal is transmitted by the transmitter 80 under the direction of the processor 86. The signal can indicate the amount of medicine that remains, or can indicate that the amount of the medicine is at or below a predetermined threshold.

Detailed Description Text (74):

FIG. 10 is a flow chart of an embodiment of a second method performed by the medical communication apparatus 50. As indicated by block 270, the method includes a step of receiving a signal associated with an amount of medicine remaining in a medicine container. The signal is received by the receiver 74 described with reference to FIG. 2.

Detailed Description Text (75):

As indicated by block 272, the method includes a step of transmitting a message to the medical database system 24 based upon the amount of medicine remaining in the medicine container 52. The message is formed by the processor 90 to include an identifier of the end user, an identifier of the medicine, and optionally the amount of medicine. The processor 90 commands the transmitter 55 to transmit the message to the medical database system 24.

Detailed Description Text (76):

FIG. 11 is a flow chart of an embodiment of a third method performed by the medical database system 24. As indicated by block 280, the method includes a step of receiving a message such as a paging message associated with an amount of medicine

that remains in a medicine container. Preferably, the message includes an identifier of the end user, an identifier of the medicine, and optionally the amount of medicine.

Detailed Description Text (77):

As indicated by block 282, the method includes a step of updating a record in the database upon receiving the message. This step can include updating the value of the estimated amount 182 of medicine remaining in the prescription as described with reference to FIG. 3.

Detailed Description Text (78):

As indicated by block 284, the method includes a step of sending a message to a pharmacy. The message can be sent to the communication unit 36 described with reference to FIG. 1. The message indicates either the amount of medicine remaining or that the amount of medicine is at or below a predetermined threshold. The message further identifies the end user. The pharmacy can utilize this information for automatically renewing selected prescriptions.

Detailed Description Text (85):

In response to reading data identifying the medicine in the medicine container 346 or data for obtaining information about the medicine, the medical communication apparatus 330 can download information regarding the medicine. The information can include side effects of the medicine and interactions with other medicines, for example.

CLAIMS:

1. A medical communication method comprising the steps of:

generating a message to alert an individual to take a first medicine and a second medicine;

transmitting the message to a wireless pager for the individual;

receiving the message using the wireless pager;

generating an alert indication using the wireless pager;

simultaneously displaying, using the wireless pager, a first graphical indication of a first dosage of the first medicine which is to be taken by the individual, and a second graphical indication of a second dosage of the second medicine which is to be taken by the individual, wherein the first dosage of the first medicine consists of N pills, wherein the first graphical indication comprises N images of an icon disposed on a container of the first medicine, and wherein N is at least two; and

transmitting a subsequent message to a communication unit other than the wireless pager upon determining a noncompliance condition for the individual.

3. A medical communication method comprising the steps of:

generating a message to alert an individual to take a first dosage of a first medicine, and to graphically indicate to the individual the first dosage of the first medicine which is to be taken, wherein the message includes an image of an icon disposed on a container of the first medicine; and

transmitting a subsequent message upon determining a noncompliance condition for the individual.

6. A medical communication method comprising the steps of:



generating a message to alert an individual to take a first dosage of a first medicine, and to graphically indicate to the individual the first dosage of the first medicine which is to be taken, wherein the message includes a designator of an image of an icon disposed on a container of the first medicine; and

transmitting a subsequent message upon determining a noncompliance condition for the individual.

[Previous Doc](#)

[Next Doc](#)

[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

End of Result Set



Generate Collection

Print

L2: Entry 2 of 2

File: USPT

Sep 14, 1999

DOCUMENT-IDENTIFIER: US 5950632 A

TITLE: Medical communication apparatus, system, and method

Drawing Description Text (4):

FIG. 2 is a block diagram of an embodiment of a medical communication apparatus and a medicine container in accordance with the present invention;

Detailed Description Text (5):

Preferably, the medical communication apparatus 20 communicates with at least one medicine container 26 containing the at least one medicine which is to be taken. Here, the medical communication apparatus 20 transmits a signal to the at least one medicine container 26. Selected medicine containers generate an audible indication or a visible indication in response to receiving the signal. The indication is beneficial in aiding the end user 22 to locate selected medicine containers at times when medicine contained therein is to be taken.

Detailed Description Text (8):

Optionally, the at least one medicine container 26 senses an amount of medicine remaining therein, and transmits a signal associated therewith to the medical communication apparatus 20. In turn, the medical communication apparatus 20 communicates a signal associated with the amount of medicine remaining to the medical database system 24. The medical database system 24 communicates with a communication unit 36 associated with a medical supply source, such as a pharmacy, based upon the amount of medicine remaining. For example, the medical database system 24 can communicate a message to a pharmacy when the amount of medicine is at or below a predetermined threshold. This is beneficial for automatic renewal of prescriptions when the amount of medicine is below the predetermined threshold.

Detailed Description Text (13):

FIG. 2 is a block diagram of an embodiment of a medical communication apparatus 50 and a medicine container 52 in accordance with the present invention. The medical communication apparatus 50 includes a receiver 54 and an optional transmitter 55 to communicate with the medical database system 24. Preferably, the receiver 54 is included in a selective call receiver, such as a wireless pager, to communicate with the medical database system 24 via a paging service. The receiver 54 can be included in a one-way pager (receive-only) or can be included with the transmitter 55 in a two-way pager (receive and transmit). The paging service can utilize a local paging network, a regional paging network, a nationwide paging network, or a global paging network.

Detailed Description Text (21):

Optionally, the medical communication apparatus 50 includes a transmitter 72 and a receiver 74 for communicating signals with a receiver 76 and a transmitter 80 associated with the medicine container 52. In response to the receiver 54 receiving a paging message indicating that the medicine 64 is to be taken, the transmitter 72 transmits a signal for reception by the receiver 76. An indicator 82 generates an indication, such as an audible indication or a visible indication, in response to the receiver 76 receiving the signal. The indicator 82 can include a display device

having a light-emitting display element or a liquid crystal display element to generate a visible indication, or an audio output device such as a speaker or a buzzer to generate an audible indication.

Detailed Description Text (38):

Alternatively, the machine-readable data 94 is stored in and accessed from a radio frequency tag associated with the medicine container 52. Here, the data reader 92 includes a tag communicating device.

Detailed Description Text (45):

The medical communication apparatus 100 transmits a first signal for reception by a receiver associated with the first medicine container 102, and a second signal for reception by a receiver associated with the third medicine container 106. The first signal directs an audio output device 140 associated with the first medicine container 102 to generate an audible indication. The second signal directs an audio output device 142 associated with the third medicine container 106 to generate an audible indication. The audible indications assist the end user 22 to determine which medicines to take, and to locate the first medicine container 102 which is remotely located from the second medicine container 104 and the third medicine container 106.

Detailed Description Text (70):

FIG. 8 is a flow chart of an embodiment of a first method performed by a medicine container. As indicated by block 250, the method includes a step of receiving a signal from the medical communication apparatus. The signal is received by the receiver 76 described with reference to FIG. 2.

Detailed Description Text (74):

FIG. 10 is a flow chart of an embodiment of a second method performed by the medical communication apparatus 50. As indicated by block 270, the method includes a step of receiving a signal associated with an amount of medicine remaining in a medicine container. The signal is received by the receiver 74 described with reference to FIG. 2.

Detailed Description Text (85):

In response to reading data identifying the medicine in the medicine container 346 or data for obtaining information about the medicine, the medical communication apparatus 330 can download information regarding the medicine. The information can include side effects of the medicine and interactions with other medicines, for example.

[Previous Doc](#)

[Next Doc](#)

[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

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Print

L2: Entry 1 of 2

File: USPT

Aug 22, 2000

DOCUMENT-IDENTIFIER: US 6108685 A

TITLE: System for generating periodic reports generating trend analysis and intervention for monitoring daily living activity

Detailed Description Text (31):

When a medication container 402 is disposed within a container opening 406 of the medication holder 404 the medication container 402 closes a conventional normally open switch 416. When the medication container 402 is removed from the opening 406 of the medication holder 404 it releases the normally open switch 416 causing it to open. When a switch 416 within the medication holder 404 is opened or closed in this manner by a medication container 402 a radio frequency medication transmitter 424 is activated. In this manner the medication self-management detection system 116 communicates this activity of daily living information with the system controller device 110.

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)